

## Algebra Check In

$$\frac{x}{\textcircled{4}} = \frac{3}{7} \quad \times 4$$

$$x = \frac{3 \times 4}{7}$$

$$x = \frac{12}{7}$$

$$\frac{8}{x} = \frac{13}{6}$$

$$\frac{x}{8} = \frac{6}{13}$$

$$x = \frac{6 \times 8}{13}$$

$$x = \frac{48}{13}$$

~~$$\frac{8}{x} = \frac{13}{6}$$~~

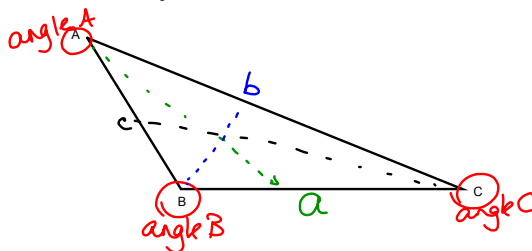
$$6(8) = 13(x)$$

$$48 = 13x$$

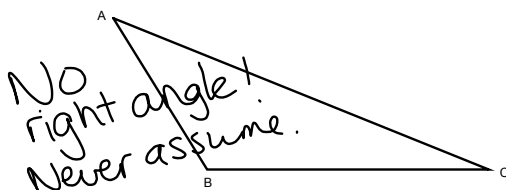
$$\frac{48}{13} = x$$

## Sine Law

Let's start with how we label a triangle....



Why can't we use SOHCAHTOA here?



The Sine Law says:

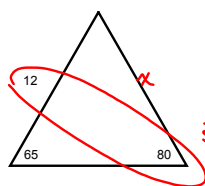
finding length

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

finding angle

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

Example: finding a side length



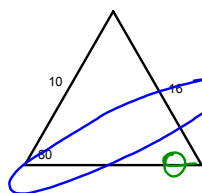
Because we have  
a complete "PAIR",  
we use sine law

$$\frac{x}{\sin 65^\circ} = \frac{12}{\sin 80^\circ}$$

$$x = \frac{12 \sin 65^\circ}{\sin 80^\circ}$$

$$x = 11$$

Example: finding an angle



PAIR  $\therefore$  sine law

$$\frac{\sin \theta}{10} = \frac{\sin 80^\circ}{16}$$

$$\sin \theta = \frac{10 \sin 80^\circ}{16}$$

$$\sin \theta = 0.6$$

$$\theta = \sin^{-1}(0.6)$$

$$\theta = 37^\circ$$


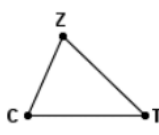


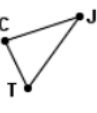




## Sine Law Worksheet

Date:

## The Sine Law

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

Use **the law of sines** to solve for the unknown side or angle. Assume that all of the angles are acute.

<p>1.</p>  <p> <math>\angle M = 33^\circ</math>  <math>\overline{MZ} = 21</math>  <math>\overline{ZC} = 12</math>  <math>\angle C = \underline{\hspace{2cm}}^\circ</math> </p>	<p>2.</p>  <p> <math>\angle Z = 70^\circ</math>  <math>\overline{CZ} = 35.6</math>  <math>\overline{CT} = 48.1</math>  <math>\angle C = \underline{\hspace{2cm}}^\circ</math> </p>	<p>3.</p>  <p> <math>\angle K = 88^\circ</math>  <math>\angle R = 66^\circ</math>  <math>\overline{PR} = 6.1</math>  <math>\overline{PK} = \underline{\hspace{2cm}}</math> </p>
<p>4.</p>  <p> <math>\angle U = 78^\circ</math>  <math>\angle M = 75^\circ</math>  <math>\overline{UM} = 74</math>  <math>\overline{LM} = \underline{\hspace{2cm}}</math> </p>	<p>5.</p>  <p> <math>\angle C = 82^\circ</math>  <math>\overline{TJ} = 29</math>  <math>\overline{JC} = 26</math>  <math>\angle J = \underline{\hspace{2cm}}^\circ</math> </p>	<p>6.</p>  <p> <math>\angle K = 76^\circ</math>  <math>\angle J = 61^\circ</math>  <math>\overline{JK} = 12</math>  <math>\overline{KH} = \underline{\hspace{2cm}}</math> </p>
<p>7.</p>  <p> <math>\angle T = 76^\circ</math>  <math>\overline{PV} = 40.2</math>  <math>\overline{TV} = 28.2</math>  <math>\angle V = \underline{\hspace{2cm}}^\circ</math> </p>	<p>8.</p>  <p> <math>\angle S = 26^\circ</math>  <math>\angle P = 72^\circ</math>  <math>\overline{SM} = 20</math>  <math>\overline{PM} = \underline{\hspace{2cm}}</math> </p>	<p>9.</p>  <p> <math>\angle B = 80^\circ</math>  <math>\angle Z = 25^\circ</math>  <math>\overline{ZB} = 44</math>  <math>\overline{BG} = \underline{\hspace{2cm}}</math> </p>